ABSTRACT

A method of carrying out a reaction comprising the steps of: mixing at least one organic reaction component with at least one fluorous reaction component having the formula:

 $X^{1}Sn(R)_{n}[Rs(Rf)]_{3-n}, X^{1}X^{2}Sn[Rs(Rf)]_{2} \text{ or } O=Sn[Rs(Rf)]_{2}$

wherein n is 1 or 2, R is a C_1-C_6 alkyl group, X^1 and X^2 are independently, the same or different, H, F, Cl, Br, I, N_3 , OR¹, OOR¹ SR¹, SeR¹, CN, NC, NR¹R², an aryl group, a heteroaryl group, an alkyl group of 1 to 20 carbons, an alkenyl group, an alkynyl group, $-C(0)R^3$, $M((Rs')(Rf'))_3$, $OM((Rs')(Rf'))_3$ or $OOM((Rs')Rf'))_3$, wherein M is Si, Ge, or Sn, and wherein R^1 and R^2 are each independently the same or different H, an alkyl group, $-SO_2R^3$ or $-C(0)R^3$, wherein R^3 is an alkyl group or an aryl group, and wherein Rs and Rs' are each independently the same or different a spacer group, and wherein Rf and Rf' are each independently the same or different a fluorous group; carrying out a reaction to produce an organic product; and after producing the organic product, separating any excess of the fluorous reaction component and any fluorous byproduct of the fluorous reaction component using a fluorous separation technique. Several compounds have the formula:

 $X^{1}Sn(R)_{n}[Rs(Rf)]_{3-n}$, $X^{1}X^{2}Sn[Rs(Rf)]_{2}$ or $O=Sn[Rs(Rf)]_{2}$.